Allen

Allen Overview

Volunteer monitoring began at Allen Lake in 1994 and continued through 2004. Throughout that time the lake has been consistently high in primary productivity (eutrophic), with fair water quality.

Allen Lake does not have a public access boat ramp. However, residents should monitor aquatic plants to catch early infestations of Eurasian milfoil, Brazilian elodea, or other noxious aquatic weeds.

Lake Temperature, Secchi Depth, Lake Level and Precipitation

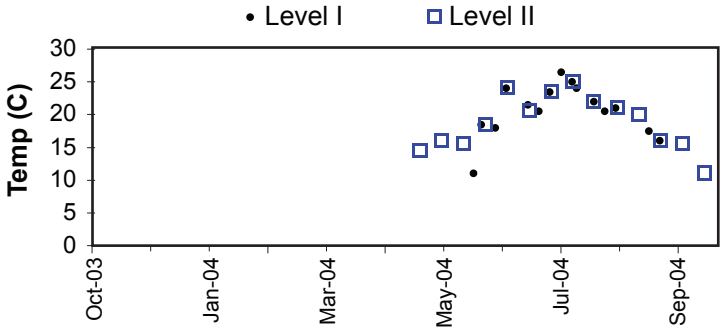
Secchi transparency was very stable through the sampling season, varying between 0.5 to 0.8 m, averaging 0.6 which is among the lowest values for monitored lakes in 2004, probably due in part to the highly colored water. Surface temperatures were in the midrange, with a maximum reading of 25.0 degrees Celsius.

Both the local precipitation and the lake level readings were incomplete for the year.

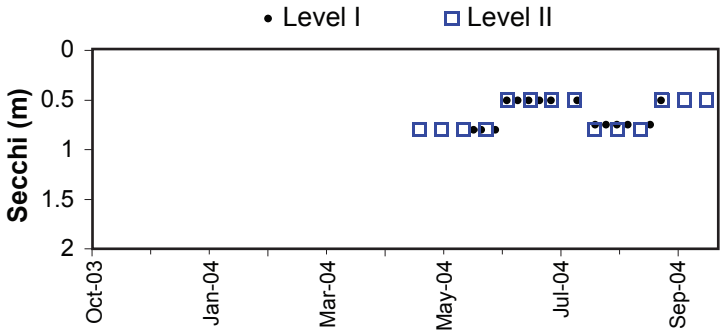
Nutrient Analysis and TSI Ratings

Both total phosphorus and total nitrogen remained in proportion to each other through the summer and increased in mid fall, with the exception of early July, when phosphorus was abnormally high. Aside from that date, the N:P ratio ranged from 16 to 37, averaging 26 which suggested that there might be periods of good conditions for nuisance bluegreen growth.

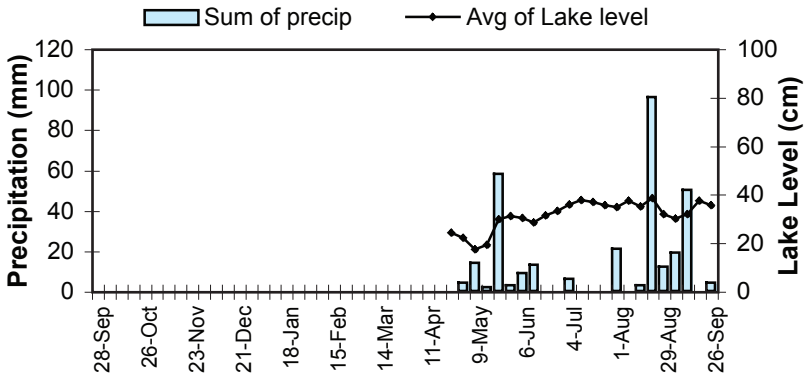
Lake Temperature



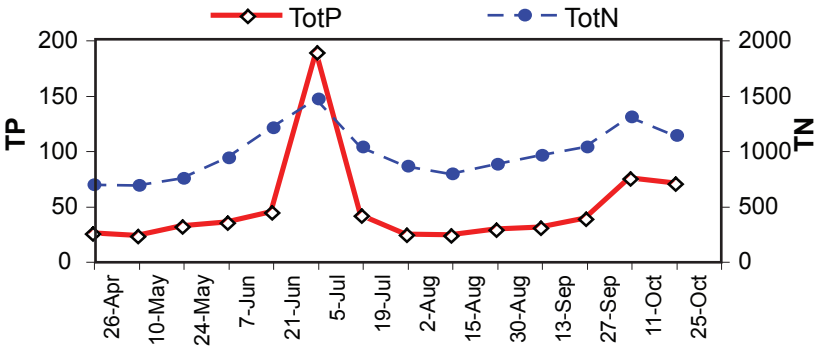
Secchi Depth



Lake Level and Precipitation



Nutrient Analysis



Thermal stratification persisted through the summer, although heat diffusion warmed the bottom water. Some phosphorus build-up occurred in the deep water. The profile chlorophyll data showed the majority of algae in the surface water in late spring, but by the end of August the highest chlorophyll concentrations were found in deeper water.

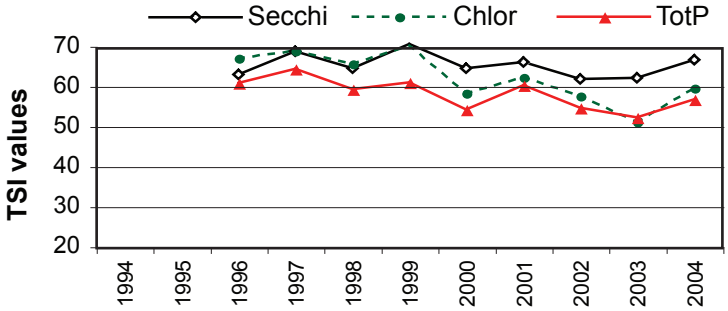
TSI values increased slightly in 2004, reversing the recent decline and staying in the realm of eutrophy. For the past five years TSI-Secchi has been higher than the other two indicators, suggesting that water color may be affecting the value.

Chlorophyll and Algae

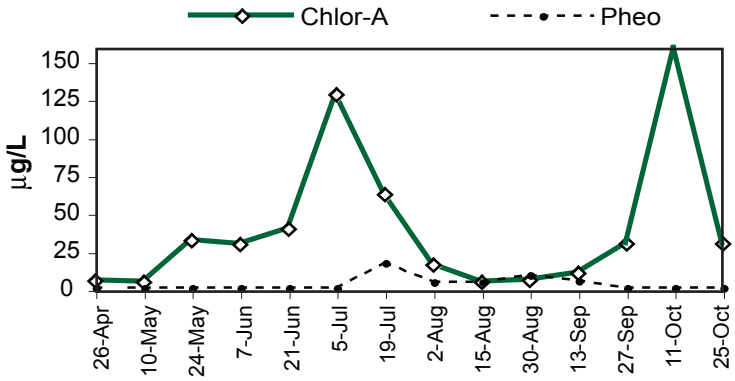
Chlorophyll values reached a peak in early July, declined through the summer, and rose to a maximum in October. Pheophytin (degraded chlorophyll) rose slightly in July, suggesting the sample might have contained some bottom material. Phytoplankton populations in the lake were dominated by the bluegreen *Aphanizomenon*. Also common were several species of colonial green algae, a variety of cryptomonads, and the euglenophyte *Trachelomonas*.

Date	Secchi	depth-m	degC	Chlor-A	TP µg/L	TN µg/L
5/24/04	0.8	1	15.5	30.9	30.9	732
		2	15.0	2.20	26.7	717
		3.5	10.0	6.39	105.0	768
8/30/04	0.8	1	21.0	4.70	27.8	860
		2	19.0	37.2	42.4	1150
		3.5	13.0	69.7	201.0	824

TSI Ratings



Chlorophyll a Concentrations (ug/L)



Common Algae

	Group
Aphanizomenon flos-aquae	Cyanobacteria
unidentified colonial species	Chlorophyta
Trachelomonas sp	Euglenophyta

Allen

2004 Level I Data

Daily Data Summary

Week of	Sum of precip. (mm)	# of days	Avg of lake level (cm)	# of days
28-Sep-03				
5-Oct-03				
12-Oct-03				
19-Oct-03				
26-Oct-03				
2-Nov-03				
9-Nov-03				
16-Nov-03				
23-Nov-03				
30-Nov-03				
7-Dec-03				
14-Dec-03				
21-Dec-03				
28-Dec-03				
4-Jan-04				
11-Jan-04				
18-Jan-04				
25-Jan-04				
1-Feb-04				
8-Feb-04				
15-Feb-04				
22-Feb-04				
29-Feb-04				
7-Mar-04				
14-Mar-04				
21-Mar-04				
28-Mar-04				
4-Apr-04				
11-Apr-04				
18-Apr-04				
25-Apr-04	0	2	24.3	2
2-May-04	4	7	20.9	7
9-May-04	14	6	17.4	7
16-May-04	2	7	19.8	7
23-May-04	58	6	31.4	7
30-May-04	3	5	30.1	7
6-Jun-04	15	3	29.6	7
13-Jun-04	7	5	28.7	7
20-Jun-04	0	1	31.4	7
27-Jun-04	0	3	33.1	7
4-Jul-04	6	3	36.5	5
11-Jul-04	0	5	37.3	7
18-Jul-04	0	7	36.5	7
25-Jul-04	0	6	35.0	6
1-Aug-04	21	6	35.4	4
8-Aug-04	0	7	36.9	7
15-Aug-04	49	7	35.5	7
22-Aug-04	50	5	36.9	7
29-Aug-04	12	6	32.4	7
5-Sep-04	19	4	28.5	5
12-Sep-04	50	5	32.5	7
19-Sep-04	0	1	37.0	2
26-Sep-04	4	4	35.4	4
Min	0.0		17.4	
Max	58.0		37.3	
Total	314.0			

Weekly Data Summary

Sample date	Sample time	Secchi (m)	Temp (°C)	Algae* (Shore)	Algae* (at site)	Goose Count*
2-May-04	18:00	0.1	17.5	P1	P1	6
30-May-04	16:00	0.1	11.0	P1	P1	9
4-Jun-04	14:00	0.1	18.5	P1	P1	13
13-Jun-04	14:00	0.1	18.0	P1	P1	6
20-Jun-04	14:00	0.1	24.0	P1	P1	6
27-Jun-04	14:00	0.1		P1	P1	0
4-Jul-04	16:00	0.5	21.5	P1	P1	0
11-Jul-04	16:00	0.5	20.5	P1	P1	11
18-Jul-04	16:00	0.5	23.5	P1	P1	9
			26.5			
			25.0			
4-Aug-04	16:00	0.5	24.0	P1	P1	7
15-Aug-04	16:00	0.8	22.0	P1	P1	7
22-Aug-04	14:00	0.8	20.5	P1	P1	7
29-Aug-04	16:00	0.8	21.0	P1	P1	2
5-Sep-04	16:00	0.8		P1	P1	2
19-Sep-04	15:00	0.8	17.5	P1	P1	2
26-Sep-04	17:00	0.5	16.0	P1	P1	16
Min		0.1	11.0			0
Max		0.8	26.5			16

* See introduction for discussion of algae assessment and goose count methods.

2004 Level II Data

Date (2004)	Temp (°C)	Secchi (m)	Chl-*a* (µg/l)	TP (µg/l)	TN (µg/l)	Algae Obsv.	N:P	Calculated TSI		
								Secc	chl-a	TP
26-Apr	14.5	0.8	4.41	24	676	1	28	63.2	45.1	50.0
10-May	16.0	0.8	3.36	22.1	672	1	30	63.2	42.5	48.8
24-May	15.5	0.8	30.90	30.9	732	1	24	63.2	64.2	53.6
7-Jun	18.5	0.8	28.20	34.1	919	1	27	63.2	63.3	55.1
21-Jun	24.0	0.5	38.20	43.1	1190	1	28	70.0	66.3	58.4
5-Jul	20.5	0.5	127.00	188	1450	1		70.0	78.1	79.7
19-Jul	23.5	0.5	60.90	40.3	1020	1	25	70.0	70.9	57.5
2-Aug	25.0	0.5	14.60	23	845	1	37	70.0	56.9	49.4
15-Aug	22.0	0.8	3.20	22.5	777	1	35	63.2	42.0	49.1
30-Aug	21.0	0.8	4.65	27.8	860	1	31	63.2	45.6	52.1
13-Sep	20.0	0.8	9.08	29.3	940	1	32	63.2	52.2	52.9
27-Sep	16.0	0.5	28.60	37.8	1020	1	27	70.0	63.5	56.6
11-Oct	15.5	0.5	157.00	73.9	1290	1	17	70.0	80.2	66.2
25-Oct	11.0	0.5	28.80	69.6	1120	1	16	70.0	63.5	65.4
	Temp (°C)	Secchi (m)	Chl-*a* (µg/l)	TP (µg/l)	TN (µg/l)	Algae	N:P	Calculated TSI		
								Secc	chl-a	TP
Mean	18.8	0.7	38.5	47.6	965.0	1.0	27	66.6	59.6	56.8
Median	19.3	0.7	28.4	32.5	929.5	1	28	66.6	63.4	54.4
Min	11.0	0.5	3.2	22.1	672.0	1	16	63.2	42.0	48.8
Max	25.0	0.8	157.0	188.0	1450.0	1	37	70.0	80.2	79.7
Count	14	14	14	14	14	14	13	14	14	14

TSI Average = 61.0